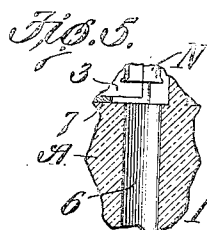
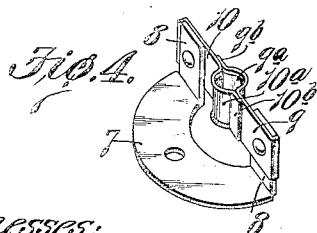
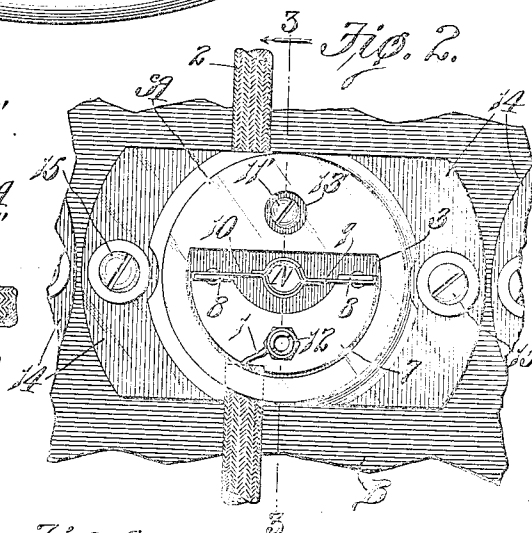
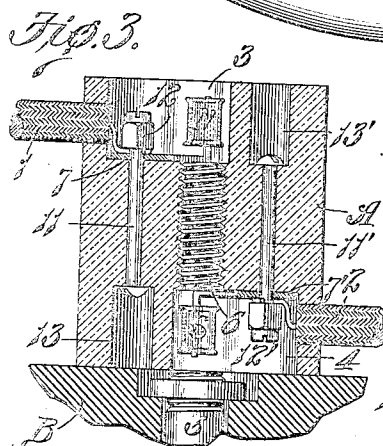
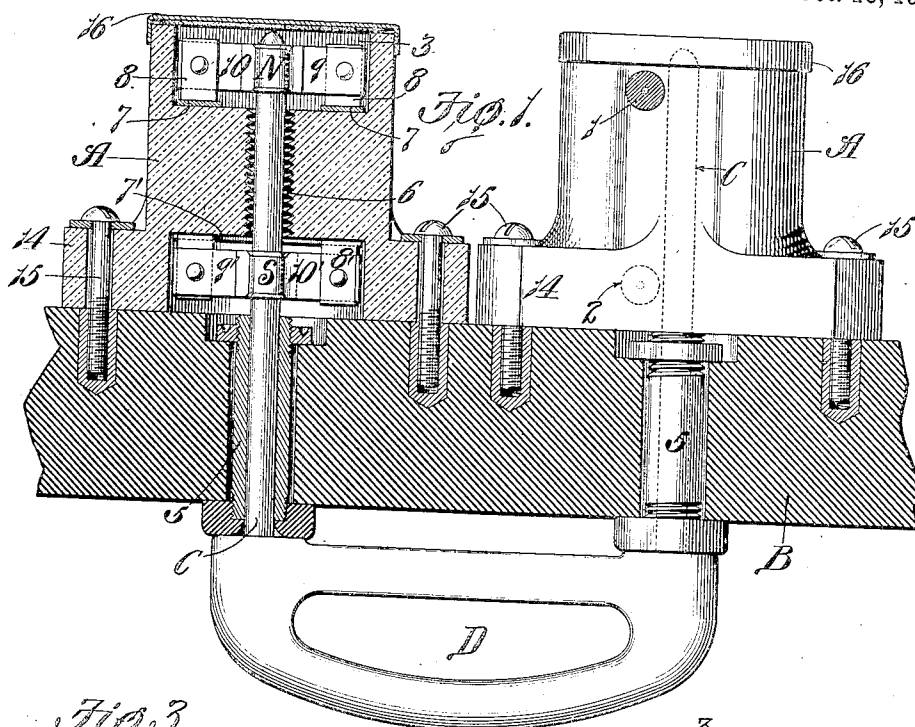


F. B. ADAM.
PLUG SWITCH.
APPLICATION FILED DEC. 20, 1909.

973,096.

Patented Oct. 18, 1910.



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UNITED STATES PATENT OFFICE.

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PLUG-SWITCH.

973,096.

Specification of Letters Patent.

Patented Oct. 18, 1910.

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To all whom it may concern:

Be it known that I, FREDRICK B. ADAM, a citizen of the United States, residing at St. Louis, Missouri, have invented a certain new and useful Improvement in Plug-Switches, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to plug switches of the single pole or unit design intended for high voltages and small amperes.

One object of my invention is to provide a plug switch of the self-contained unit type that can be used in combination with other units for connecting high tension circuits of one or more conductors.

Another object is to provide a plug switch that can be readily installed in combination with others on the back of a switch-board panel.

Another object is to provide a plug switch in which the contacts are so designed that they get a maximum contact on the plug or member which connects the contacts together, thereby insuring a perfect connection between the contacts when the plug is in operation.

Another object is to provide a plug switch which is so designed that the plug will be centered accurately when it is inserted, thus eliminating undue friction on the plug and also holding the plug out of engagement with the insulating member that carries the contacts. And still another object of my invention is to provide a plug switch which is so designed that all live metal parts are completely surrounded by an insulating material and insulating cap at open end.

Other objects and desirable features of my invention will be hereinafter pointed out.

Figure 1 is a sectional view of a portion of a switch-board panel equipped with a pair of my improved switches, one switch being shown in section and the other in elevation; Fig. 2 is a top plan view of one of the switches, the cap or cover for the insulating member being removed; Fig. 3 is a vertical sectional view taken on approximately the line 3—3 of Fig. 2; Fig. 4 is a perspective view of one of the contacts; and Fig. 5 is a detail sectional view of a portion of an insulating member of slightly different construction from that shown in Fig. 3.

Referring to the drawings which illustrate the preferred form of my invention, A designates the insulating member or contact-carrying member of my improved switch, and B designates a switch-board panel to which said insulating member is connected.

In Fig. 1 of the drawings I have shown a pair of switches mounted on said panel, and I have also shown the plugs C of said pair of switches connected to a single handle or operating device D. It will be understood, however, that this switch can be operated in individual units or in a combination of units necessary for connecting the different circuits. As both of the switches shown in Fig. 1 are of the same construction I will only describe the switch shown in section at the left of said figure.

The wires 1 and 2 of the circuit which said switch controls, lead to contacts N and S, respectively, that are mounted on the insulating member A. The contact N is arranged inside of a recess or pocket 3 formed in the outer end of the insulating member, and the contact S is arranged inside of a recess or pocket 4 formed in the inner end of said member; namely, the end that butts against the rear face of the switch-board panel B. The panel is provided with a bushing 5 through which the plug C is inserted, and the contacts N and S on the insulating member are arranged in alinement with said bushing and also in alinement with an opening 6 formed in said insulating member so that the plug C will engage both contacts when it is inserted in the bushing 5 and forced through the opening 6 in the insulating member, thereby connecting said contacts together and completing the circuit which the switch controls.

As both of the contacts N and S are constructed in the same manner I will only describe the contact N which is located at the outer end of the insulating member, the corresponding parts of the contact S being designated by the same reference characters with a prime-mark added. Said contact N consists of a base portion 7 provided with laterally projecting legs 8 to which a pair of yielding devices 9 and 10 are connected, all of said parts being formed of brass or some other suitable metal. The devices 9 and 10 are connected at their outer ends to the legs 8, and said devices project toward each other

and are provided with semi-circular-shaped portions 9^a and 10^a, respectively, that cooperate with each other to form a sleeve which surrounds the plug C of the switch when it is arranged in operative position. If desired, the devices 9 and 10 can be provided at their outer ends with extensions 9^b and 10^b, respectively, as shown in Fig. 4, that hold the semi-circular-shaped sleeve portions spaced away from each other a certain distance when the plug is not in position, the extension on the device 9 bearing against the device 10 adjacent the point where it is connected to the leg 8 and vice versa. The contact is retained in position by means of a bolt 11 that passes through openings in the insulating member and in the base portion 7 of the contact, and the nut 12, which is mounted on one end of said bolt, also clamps the wire 1 to the base portion of the contact. The insulating member is preferably countersunk at 13 so that a short bolt can be used and thus enable all of the parts of the contact N to be spaced away some distance from the parts of the contact S.

The opening 6 in the insulating member, through which the plug passes, is made large enough so that the plug will not rub or bear against the walls of said opening under normal conditions, and, if desired, said opening can be corrugated, as shown in Fig. 3, so that in case the plug C should accidentally rub against the walls of said opening, a continuous film of metal will not be deposited on said walls. By forming the opening in this manner I reduce the liability of a flash jumping from the contact S to the contact N when the plug is withdrawn for it is impossible for a continuous film to form on the walls of the opening 6 owing to the fact that said walls are corrugated or provided with raised ribs that are spaced away from each other. It will, of course, be understood that these corrugations are only a safe-guard for under normal conditions the plug C will not bear against the walls of the opening 6, and while I prefer to form said opening in this manner I do not wish it to be understood that my invention is limited to such a construction for if desired the walls of the opening 6 can be smooth, as shown in Fig. 5.

The exterior of the insulating member A is approximately cylindrical shape, as shown in Figs. 1 and 2, and as the diameter of said member is small it is possible to arrange the switches close together on the switch-board panel, the inner end of the insulating member being provided with oppositely disposed lugs or flanges 14 through which fastening devices 15 pass to connect said member to the switch-board panel. The openings in said flanges, through which the fastening devices 15 pass, are large

enough to permit the insulating member to be adjusted laterally or sidewise on the panel so as to bring the opening 6 into alignment with the bushing 5 when the switch is installed, and, if desired, an insulating cap or cover 16 can be arranged over the outer end of the insulating member so as to protect all of the live metal parts of the switch.

One advantage of a switch of the construction above described is that it is particularly adapted for use with high tension circuits by reason of the fact that the contacts are so arranged that it is practically impossible for the current to jump from one contact to the other or from the contact of one switch to the contact of an adjacent switch. Another desirable feature is that both contacts are carried by the same insulating member so that the switch can be manufactured at a lower cost and also installed quicker than the switches of this type heretofore in general use owing to the fact that only two holes have to be bored in the switch-board panel for each switch, and only a single part; namely, the insulating member, has to be adjusted to arrange both contacts in the proper position.

The split sleeve contacts, with which the plug cooperates, insure a perfect connection between the contacts, for the plug is practically surrounded at two points by yielding metallic devices, and as the plug is centered accurately by the contact S it does not rub or bear against the insulating member when it is moved into and out of operative position. Consequently, there is no undue friction on the plug so that it can be inserted and withdrawn easily. The switch is so compact that a number of switches can be placed close together on a switch-board panel, and as the contacts of the switch are completely protected and insulated from each other it is practicable to arrange a number of switches close together even when they are used with high tension circuits.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In a plug switch, a supporting member provided with an opening for receiving a metal plug or contact-connecting device, contacts carried by said member and arranged adjacent the opposite ends of said opening in such a position that they will engage said plug when it is inserted in the opening, and corrugations on the wall of said opening for preventing said plug from depositing a continuous film of metal on said wall during the operation of inserting and withdrawing the plug.

2. A plug switch having a contact that comprises a part to which the conductor is connected, and a plurality of movable wings

or arms connected to said part and having their free ends lapping over each other, said wings being provided with bent portions that coöperate with each other to form a split sleeve which completely surrounds the plug of the switch.

3. A switch having a contact that comprises a pair of movable arms projecting toward each other and provided at their outer ends with semi-circular-shaped portions which coöperate with each other to form a cylindrical sleeve for receiving a cylindrical-shaped contact-connecting device.

4. A switch having a contact that comprises a pair of movable arms projecting toward each other and provided at their outer ends with bent portions which coöperate with each other to form a sleeve for receiving a contact-connecting device, and means for maintaining said sleeve at a certain diameter when the contact-connecting device is not in operative position.

5. A switch having a contact that comprises a pair of movable arms projecting toward each other and provided intermediate their ends with bent portions that coöperate with each other to form a sleeve for receiving the contact-connecting device of the switch.

6. A plug switch comprising a supporting member provided with an opening for receiving the plug or contact-connecting device of the switch, said member having recesses formed in the opposite ends thereof, and contacts arranged in said recesses in such a position that they will engage the plug of the switch when it is forced through the opening in said member.

7. A plug switch comprising a supporting member having an opening for receiving the plug or contact-connecting device of the switch, and contacts arranged adjacent the opposite ends of said opening, each of said contacts consisting of a base portion to which a conductor is adapted to be connected and a plurality of movable arms provided intermediate their ends with bent portions which form a sleeve that completely surrounds the plug of the switch.

8. A switch comprising a member formed of insulating material and provided with an opening for receiving the plug or contact-connecting device of the switch, said member having recesses formed in opposite ends thereof, and contacts arranged in said recesses and each consisting of a base portion provided with laterally projecting arms, and a pair of yielding devices connected to said arms for engaging the plug when it is arranged in operative position.

9. A switch comprising a supporting member formed of insulating material and having an opening for receiving the plug or contact-connecting device of the switch, and contacts arranged in recesses in the opposite ends of said member and each consisting of a base portion provided with laterally projecting arms and overlapping wings connected to said arms and provided with semi-circular-shaped portions that coöperate with each other to form a split sleeve which is located in alinement with the plug-receiving opening in said supporting member.

10. A plug switch comprising a supporting member formed of insulating material and having an opening for receiving the plug or contact-connecting device of the switch, contacts arranged in recesses in the opposite ends of said member in alinement with said opening, and countersunk fastening devices in said member that retain the contacts in operative position.

11. A switch comprising an insulating member that is adapted to be connected to a switch-board panel, said member being provided with an opening for receiving the plug or contact-connecting device which projects rearwardly through the panel, and contacts arranged in recesses in the opposite ends of said member and having portions that aline with the opening in said member.

12. A switch comprising an insulating member that is adapted to be connected to a switch-board panel, said member being provided with an opening for receiving the plug or contact-connecting device which projects rearwardly through the panel, contacts arranged in recesses in the opposite ends of said member and having portions that aline with the opening in said member, and a cap for covering the outer end of said member.

13. A switch comprising an insulating member that is adapted to be arranged on the back of a switch-board panel, said member being provided with an opening for receiving the plug and having recesses formed in the opposite ends thereof, contacts arranged in said recesses and coöperating with said plug for connecting the circuit, and an insulating cap or cover mounted on the outer end of said insulating member for inclosing all the live metal parts of the switch.

In testimony whereof I hereunto affix my signature in the presence of two witnesses, this seventeenth day of December 1909.

FREDRICK B. ADAM.

Witnesses:

WELLS L. CHURCH,
GEORGE BAKWELL.